MFD-Titan

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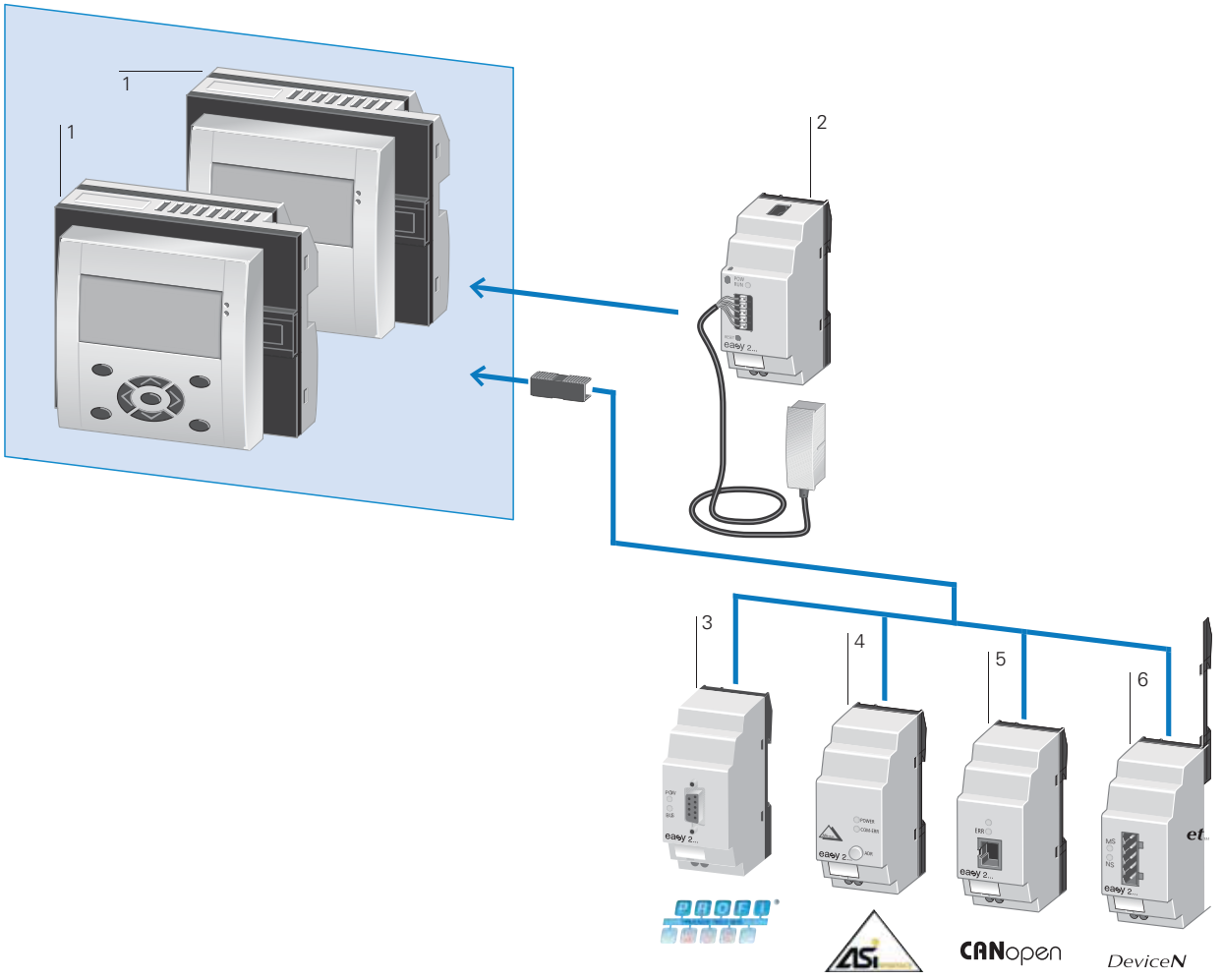
Multi-function display

System overview



MFD-Titan

The multi-function display MFD-Titan can be used in the following combinations:	
Power supply unit/CPU Power supply unit/CPU + I/O modules Power supply unit/CPU + display and operating unit Power supply unit/CPU + display and operating unit + I/O modules	
→ Page 4	
I/O modules	1
24 V DC 100 - 240 V AC	
12 digital inputs 4 usable as analog inputs (DC versions)	
4 relay outputs (max. 10 A,UL) or 4 transistor outputs	
1 analog output, optional on DC versions	
Spring-loaded terminals	
→ Page 6	
I/O modules with temperature measuring	1
24 V DC	
6 digital inputs 2 of which usable as analog inputs 2 Pt 100 or 2 Ni1000 RTD inputs	
4 transistor outputs	
1 Analog output, optional	
Spring-loaded terminals	
→ Page 6	
Power supply unit/CPU module	1
24 V DC 100 - 240 V AC	
Bus system easyNet optionally on-board	
→ Page 4	
Display/keypad	1
24 V DC	
Monochrome display 132 × 64 pixels	
With or without keypad	
Custom laser labeling possible	

Ethernet gateway

EASY209-SE	2
24 V DC	
Serial interface, PSU/CPU module to Ethernet	

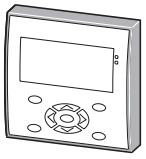
Bus modules

EASY204-DP	3
PROFIBUS DP connection as slave, 24 V DC	
EASY221-CO	
CANopen connection, 24 V DC	5
EASY205-ASI	
AS-Interface connection as slave	4
EASY222-DN	
DeviceNet connection, 24 V DC	6

Multi-function display

Display/operating units, CPU, communication modules

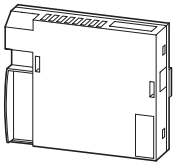
Ordering



Display/keypad

Monochrome display 132 × 64 pixels with switchable backlight
IP65, removable silver front frame

Supply voltage	Description	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America	
	With keypad, with Moeller company logotype NEMA 4x in conjunction with MFD-XM-80 protective diaphragm → 4	**MFD-80-B** 265251		1 off	Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
	With keypad, without Moeller company logotype NEMA 4x in conjunction with MFD-XM-80 protective diaphragm → 4	**MFD-80-B-X** 284905		1 off	UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	E135462 NRAQ 012528 2252-01 + 2258-02 UL Listed, CSA certified IEC: IP65, in combination with MFD-XM-80: UL/CSA Type 4X
	Without keypad, with Moeller company logotype NEMA 4x	**MFD-80** 265250		1 off	Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
	Without keypad, without Moeller company logotype NEMA 4x	**MFD-80-X** 284904		1 off	UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	E135462 NRAQ 012528 2252-01 + 2258-02 UL Listed, CSA certified IEC: IP65, UL/CSA Type 4X



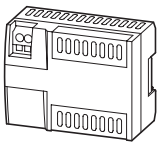
Power supply unit/CPU module

Can be combined with display and control unit MFD-80-..
and I/O module; expandable: Digital and analog inputs/outputs
and bus systems
AS-Interface, CANopen, PROFIBUS-DP, DeviceNet;
bus system easyNet optional on-board IP20
Spring-loaded terminals

Supply voltage	Description	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America	
100 - 240 V AC	Program and screen memory, with easyNet	**MFD-AC-CP8-NT** 274092		1 off	Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
100 - 240 V AC	Program and screen memory, without easyNet	**MFD-AC-CP8-ME** 274091		1 off	UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	E135462 NRAQ 012528 2252-01 + 2258-02 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -
24 V DC	Program and screen memory, without easyNet	**MFD-CP8-ME** 267164		1 off		
24 V DC	Program and screen memory, with easyNet	**MFD-CP8-NT** 265253		1 off		
24 V DC	Dual program and screen memory as MFD-...-CP8..., without easyNet	**MFD-CP10-ME** [1] 133801		1 off		
24 V DC	Dual program and screen memory as MFD-...-CP8..., with easyNet	**MFD-CP10-NT** [1] 133800		1 off		

Note [1] For availability please inquire

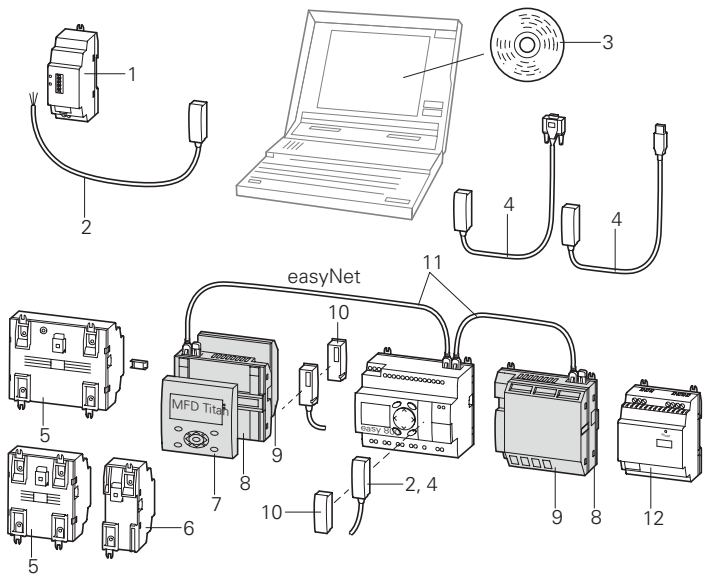
MFD-Titan

	Supply voltage	Description	For use with	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America
Power supply unit/communication modules							
IP20, can be combined with display/operating unit MFD-80... as remote text display							
	24 V DC	With connection cable (5 m, can be cut to length)	easy500 easy700	**MFD-CP4-500** 274094		1 off	Product Standards: IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking UL File No.: E135462 UL CCN: NRAQ CSA File No.: 012528 CSA Class No.: 2252-01 + 2258-02 NA Certification: UL Listed, CSA certified Degree of Protection: IEC: IP20, UL/CSA Type: -
	24 V DC	With connection cable (5 m, can be cut to length)	easy800 EC4P ES4P	**MFD-CP4-800** 274095		1 off	
	100 - 240 V AC	With connection cable (5 m, can be cut to length)	easy500 easy700	**MFD-AC-CP4-500** 286823		1 off	
	100 - 240 V AC	With connection cable (5 m, can be cut to length)	easy800 EC4P ES4P	**MFD-AC-CP4-800** 286824		1 off	
	24 V DC	Without connection cable		**MFD-CP4** 280888		1 off	
	100 - 240 V AC	Without connection cable		**MFD-AC-CP4** 286822		1 off	
Customized inscription, user program							
• Customized inscription of multi-function display with labeling software Labeleditor or • Supply of multi-function display programmed with user program			MFD-80-... MFD-CP8... MFD-CP10...	**MFD-COMBINATION-*** 265260		1 off	UL/CSA certification not required

Notes

Procedure and ordering example for Labeleditor inscription software
Individually inscribe your device in 4 stages:
– Download the inscription software: www.eaton.com, keyword: “Labeleditor”
– Creation of label template (menu-guided in the software)
– Send the label template to the factory by email. The email address is automatically set for the selected product by the program. When your template is sent, the Labeleditor issues a file name such as “EASY_12345.zip”. This file name is part of the article to be ordered (see Ordering examples).
– Send order to the Eaton office or the electrical wholesalers.

Ordering example: MFD-Titan
MFD-80-B multi-function display with “company name”:
1 x MFD-COMBINATION-*
1 x MFD-80-B
1 x the file name “MFD_xxxxx.zip” issued by the Labeleditor



Accessories

1 Ethernet gateway
2 Connection cable
3 Programming software
4 PC programming cable
5 Inputs/outputs expansion
6 output expansion, bus module, coupling module
7 Display/keypad
8 Power supply unit/CPU module
9 I/O module
10 Memory card
11 easyNet
12 Switched-mode power supply unit

Multi-function display

I/O modules

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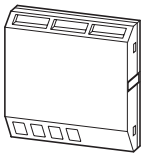
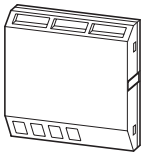
Power supply	For use with	Inputs			Outputs			Temperature range	**Part no.** Article no.	**Price** See price list	Std. pack
		Digital	Of which can be used as analog	Pt100	Relays 10 A (UL)	Transistor	Analog				
I/O modules											
IP20, spring-loaded terminals 											
24 V DC	MFD-CP8... MFD-CP10...	12	4	–	4	–	–	–	**MFD-R16** 265254		1 off
24 V DC	MFD-CP8... MFD-CP10...	12	4	–	–	4	–	–	**MFD-T16** 265255		1 off
24 V DC	MFD-CP8... MFD-CP10...	12	4	–	4	–	1	–	**MFD-RA17** 265364		1 off
24 V DC	MFD-CP8... MFD-CP10...	12	4	–	–	4	1	–	**MFD-TA17** 265256		1 off
100 - 240 V DC	MFD-AC-CP8...	12	–	–	4	–	–	–	**MFD-AC-R16** 274093		1 off
I/O module with temperature measuring											
IP20, spring-loaded terminals Temperature range configurable 											
24 V DC	MFD-CP8... as of device version 08, MFD-CP10...	6	2	2	–	4	–	-40…+90 °C 0…+250 °C 0…+400 °C	**MFD-TP12-PT-A** 106042		1 off
		6	2	2	–	4	–	-200…+200 °C 0…+850 °C	**MFD-TP12-PT-B** 106043		1 off
		6	2	–	–	4	–	-40…+90 °C 0…+250 °C	**MFD-TP12-NI-A** 106044		1 off
		6	2	2	–	4	1	-40…+90 °C 0…+250 °C 0…+400 °C	**MFD-TAP13-PT-A** 106045		1 off
		6	2	2	–	4	1	-200…+200 °C 0…+850 °C	**MFD-TAP13-PT-B** 106046		1 off
		6	2	–	–	4	1	-40…+90 °C 0…+250 °C	**MFD-TAP13-NI-A** 106047		1 off

Information relevant for export to North America

Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987;CSA C22.2 No. 213-M1987; CE marking
UL File No.	E135462
UL CCN	NRAQ
CSA File No.	012528
CSA Class No.	2252-01 + 2258-02
NA Certification	UL Listed, CSA certified
Degree of Protection	IEC: IP20, UL/CSA Type: -

MFD-Titan

Description	For use with	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America	
Connecting cables						
For connecting the MFD (-AC)-CP4 or EASY209-SE with easy500/easy700, 5 m, can be cut to length		**MFD-CP4-500-CAB5** 280886		1 off	Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
For connecting the MFD (-AC)-CP4 or EASY209-SE with easy800/MFD-..-CP8/CP10..., 5 m, can be cut to length		**MFD-CP4-800-CAB5** 280887		1 off	UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	E135462 NRAQ 012528 2252-01 + 2258-02 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -
Memory cards						
256-kB module	MFD-…-CP8	**EASY-M-256K** 256279		1 off	Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
512-kB module	MFD-CP10...	**EASY-M-512K**[1] 134969		1 off	UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	E135462 NRAQ 012528 2258-02 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -
Manuals						
German	MFD-Titan	**AWB2528-1480D** 267187		1 off		
English	MFD-Titan	**AWB2528-1480GB** 267188		1 off		
Network connection cables						
Length: 0.3 m	Length: 0.3 m	**EASY-NT-30** 256283		1 off	Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
Length: 0.8 m	Length: 0.8 m	**EASY-NT-80** 256284		1 off	UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	E135462 NRAQ 012528 2258-02 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -
Length: 1.5 m	Length: 1.5 m	**EASY-NT-150** 256285		1 off		
Bus termination resistor						
8 pole, RJ45, 124 Ω Connection to PIN 1 and PIN 2	easyNet	**EASY-NT-R** 256281		2 off		
Data cable						
4 x 0.14 mm², twisted pair, AWG 26 Length: 100 m	easyNet	**EASY-NT-CAB** 256286		1 off	UL File No. UL CCN NA Certification Degree of Protection	E135462 NRAQ UL Listed IEC: IP20, UL/CSA Type: -

Note [1] For availability please inquire

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Description	For use with	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America	
Bus connector plug						
8 pole, RJ45	easyNet	**EASY-NT-RJ45** 256280		10 off	Product Standards	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
					UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	E135462 NRAQ 012528 2258-02 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -
Crimping tool						
For RJ45 plug	EASY-NT-CAB EASY-NT-RJ45	**EASY-RJ45-TOOL** 256282		1 off		

Multi-function display

Accessories

MFD-Titan

Description	For use with	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America	
Point-to-point connection cable						
Serial interface for connecting MFD-…-CP8/CP10... to easy800 or MFD-…-CP8/CP10..., 5 m, can be cut to length	easy800 MFD-…-CP8	**MFD-800-CAB5** 266041		1 off	Product Standards UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking E135462 NRAQ 012528 2252-01 + 2258-02 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -

MFD-Titan

Description	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America	
Switched-mode power supply units					
Primary-switched mode, stabilized					
Rated input voltage: 50/60 Hz: 100 - 240 V Rated output voltage: 24 V/12 V DC Rated output current: 0.35 A/20 mA	**EASY200-POW** 229424		1 off	Product Standards UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking E135462 NRAQ 012528 2252-01 + 2258-02 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -
Rated input voltage: 50/60 Hz: 100 - 240 V AC Rated output voltage (residual ripple): 24 V DC (± 3 %) Rated output current: 1.25 A	**EASY400-POW** 212319		1 off		
	EASY430-POW 110940		1 off	Product Standards UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 107.1-01; CE marking E300415 NMTR,NMTR7 UL report applies to both US and Canada 3211-87,3211-07 UL Listed, certified by UL for use UL Listed, certified by UL for use in Canada IEC: IP20, UL/CSA Type: -
Rated input voltage: 50/60 Hz: 100 - 240 V AC Rated output voltage (residual ripple): 24 V DC (± 3 %) Rated output current: 2.5 A	**EASY500-POW** 110941		1 off		
Rated input voltage: 50/60 Hz: 100 - 240 V AC Rated output voltage (residual ripple): 24 V DC (± 3 %) Rated output current: 4.2 A	**EASY600-POW** 262399		1 off		
Ballast					
To increase the AC input current					
6 channels, cable length up to 100 m	**EASY256-HCI** 231168		1 off	Product Standards UL File No. UL CCN CSA File No. CSA Class No. NA Certification Degree of Protection	IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking E135462 NRAQ 012528 2252-01 UL Listed, CSA certified IEC: IP20, UL/CSA Type: -

MFD-Titan

Description	For use with	Part no. Article no.	Price See price list	Std. pack	Information relevant for export to North America
PROFIBUS-DP data cable					
Twisted pair, without plug, 2-core, 2 x 0.64 mm² (only suitable for fixed wiring) 100 m		**ZB4-900-KB1** 206983		100 m	
PROFIBUS-DP bus connector plug					
Pins, 9 pole Cable entry, angled 90°		**ZB4-209-DS2** 206982		1 off	
Metallised insulated housing Maximum transfer rate 12 MBit/s Integrated switch (accessible from the outside) for the bus terminating resistors Terminal block for two cable entries, with straight or 90° angled cable entry, as required		**ZB4-209-DS3** 217820		1 off	
Connection plug					
Bus connector plug between base unit and expansion unit/bus module		**EASY-LINK-DS** 221607		1 off	UL/CSA certification not required
Fixing bracket For screw fixing to mounting plate					
3 fixing brackets per easy400, 500, 600, 700, 800, EC4P, ES4P 2 fixing brackets per easy200 3 fixing brackets per MFD...-CP8/CP10…		**ZB4-101-GF1** 061360		9 off	UL/CSA certification not required
Telescopic clip					
With 35mm top-hat rail to IEC/EN 60715 for mounting depth compensation when rear mounting in CI-K… enclosures and cabinets. Stepless adjustment via scale from 75 – 115 mm. Screw and snap fastening		**M22-TA** 226161		1 off	Product Standards: IEC/EN 60947-5; UL 508; CSA-C22.2 No. 14-05; CSA-C22.2 No. 94-91; CE marking UL File No.: E29184 UL CCN: NKCR CSA File No.: 012528 CSA Class No.: 3211-03 NA Certification: UL Listed, CSA certified
Mounting rail to IEC/EN 60715 Mounting rail with cutout specifically for MFD...-CP8/CP10… for fixing easy expansion units (2 space units) Length: 142.5 mm					
	easy200	**MFD-TS-144** 274090		1 off	UL/CSA certification not required
Protective cover					
Transparent Protection against accidental actuation sealable Application without front frames	MFD-80…	**MFD-XS-80** 265259		1 off	Product Standards: IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking UL File No.: E135462 UL CCN: NRAQ CSA File No.: 012528 CSA Class No.: 2252-01 + 2258-02 NA Certification: UL Listed, CSA certified
Protective diaphragm					
Transparent version for harsh environmental conditions and application in the food industry For increasing the degree of protection to NEMA 4X for MFD-80-B	MFD-80…	**MFD-XM-80** 265258		1 off	Product Standards: IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking UL File No.: E135462 UL CCN: NRAQ CSA File No.: 012528 CSA Class No.: 2252-01 + 2258-02 NA Certification: UL Listed, CSA certified Degree of Protection: IEC: IP65, UL/CSA Type 4X

Control relays, multi-function display

Display/operating units, CPU, communication modules

MFD-80, MFD-(AC)-CP...

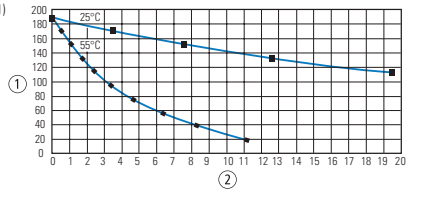
		unit	MFD-80..	MFD-CP4...	MFD-AC-CP4.. MFD-AC-CP8..	MFD-CP10.. MFD-CP8..
General						
Standards			EN 61000-6-1/-2/-3/-4, IEC 60068-2-6, IEC 60068-2-27			
Dimensions (W x H x D)		mm	86.5 x 86.5 x 21.5 (with buttons) 86.5 x 86.5 x 20 (without buttons)	75 x 58 x 36.2	107.5 x 90 x 30	107.5 x 90 x 30
Weight		kg	0.13	0.16	0.14	0.14
Mounting			2 x 22.5 mm, display fastened using 2° threaded fixing rings. Wall thickness: without top-hat rail (CPU) 1 – 6 mm with top-hat rail 1 – 4 mm	Plug-fitted to the display fixing shaft	Fitted on the fixing shaft of the display or on top-hat rail according to IEC/EN 60715, 35 mm deep (without display)	Fitted on the fixing shaft of the display or on top-hat rail according to IEC/EN 60715, 35 mm deep (without display)
Terminal capacity						
Solid		mm^2	–	–	0.2/4 (AWG 24 - 12)	0.2/4 (AWG 24 - 12)
Flexible with ferrule		mm^2	–	–	0.2/2.5 (AWG 24 - 12)	0.2/2.5 (AWG 24 - 12)
Flat-blade screwdriver		mm	–	–	3.5 x 0.6	3.5 x 0.6
Max. tightening torque		Nm	–	–	–	–
Ambient climatic conditions						
Operating ambient temperature		°C	-25 - 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2			
Condensation			Prevent condensation by means of suitable measures			
LCD display (clearly legible)		°C	-5 - 50			
Storage		°C	-40 - 70	-40 - 70	-40 - 70	-40 - 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 - 95	5 - 95	5 - 95	5 - 95
Air pressure (in operation)		hPa	795 - 1080	795 - 1080	795 - 1080	795 - 1080
Ambient mechanical conditions						
Protection type (IEC/EN 60529, EN50178, VBG 4)			IP65	IP20	IP20	IP20
Vibrations (IEC/EN 60068-2-6)						
Constant amplitude 0.15 mm		Hz	10 - 57	10 - 57	10 - 57	10 - 57
Constant acceleration, 2 g		Hz	57 - 150	57 - 150	57 - 150	57 - 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Shocks	18	18	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1	1	1
Mounting position			Vertical or horizontal			

MFD-80, MFD-(AC)-CP...

	unit	MFD-80..	MFD-CP4...	MFD-AC-CP4.. MFD-AC-CP8..	MFD-CP10.. MFD-CP8..
Electromagnetic compatibility (EMC)					
Overvoltage category/ pollution degree		–	–	–	–
Electrostatic discharge (ESD), to IEC EN 61000-4-2					
Air discharge	kV	8	8	8	8
Contact discharge	kV	6	6	6	6
Electromagnetic fields (RFI), to IEC EN 61000-4-2	V/m	10	10	10	10
Radio interference suppression		EN 55011 Class B, EN 55022 Class B			
Burst to IEC/EN 61000-4-4					
Supply cables	kV	2	2	2	2
Signal cables	kV	2	2	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5, Level 2)					
Supply cables, symmetrical		–	0.5	1	0.5
Radiated RFI, to IEC/EN 61000-4-6	V	10	10	10	10
Insulation resistance					
Clearance in air and creepage distances		EN 50178, UL 508, CSA C22.2, No. 142			
Insulation resistance		EN 50178			
Back-up/accuracy of the real-time clock					
Back-up time		–	–	1)	1)
Accuracy of the real-time clock at 55 °C	s/day	–	–	Normally ±5 s/day (±0.5 h/Year)	Normally ±5 s/day (±0.5 h/Year)
Repetition accuracy of timing relays					
Accuracy of timing relay (of value)	%	–	–	± 0.02	± 0.02
Resolution					
Range "S"	ms	–	–	5	5
Range "M:S"	s	–	–	1	1
Range "H:M"	min	–	–	1	1
Retentive memory					
Write cycles of the retentive memory (minimum)		–	–	10^{10} (read/write cycles)	10^{10} (read/write cycles)

Notes For additional technical data EASY5... and EASY7... → AWB2528-1508D, EASY8... → AWB2528-1423D

1)



① Backup time (hours)
② Service life (years)

Control relays, multi-function display

CPU, communication modules

MFD-(AC)-CP...

		unit	MFD-CP4..	MFD-CP8.. MFD-CP10..	MFD-AC-CP4.. MFD-AC-CP8..
Power supply					
Rated operational voltage	U_e	V	24 DC (-15/+20 %)	24 DC (-15/+20 %)	100/110/115/120//230/240 AC (+10/-15 %)
Permissible range		V AC			85…264
Permissible range		V DC	20.4…28.8	20.4…28.8	
Ripple		%	≦5	≦5	–
Frequency		Hz	–	–	50/60 (± 5%)
Input current					
At 115/120 V AC 60 Hz		mA	–	–	Normally 90
At 230/240 V AC 50 Hz		mA	–	–	Normally 60
At 24 V DC		mA	Normally 185	Normally 200	–
Voltage dips (IEC/EN 61131-2)		ms	10	10	10
Heat dissipation					
At 115/120 V AC		VA	–	–	Normally 11
At 230/240 V AC		VA	–	–	Normally 15
At 24 V DC		W	1.5	3.4	–
Point-to-point connection					
Stations			1	–	–
Baud rate					
easy500, easy700		MBit/s	9.6 kBaud	–	–
easy800, MFD, EC4P			19.2 kBaud	–	–
Distance		m	Max. 5	Max. 5	Max. 5
Potential isolation					
From power supply			Yes	–	–
From the connected device			Yes	–	–
Terminal type			Spring-loaded terminals	–	–
Power pulses					
Stations		Num-ber	Max. 1	Max. 8	Max. 8
Data transfer rate/distance			–	1000 Kbit/s, 6 m 500 Kbit/s, 25 m 250 Kbit/s, 40 m 125 Kbit/s, 125 m 50 Kbit/s, 300 m 20 Kbit/s, 700 m 10 Kbit/s, 1000 m	1000 Kbit/s, 6 m 500 Kbit/s, 25 m 250 Kbit/s, 40 m 125 Kbit/s, 125 m 50 Kbit/s, 300 m 20 Kbit/s, 700 m 10 Kbit/s, 1000 m
Potential isolation					
From power supply			–	Yes	Yes
From the inputs			–	–	Yes
From the outputs			–	Yes	Yes
From PC interface, memory card, easyNet, easyLink			–	Yes	Yes
Bus termination (first and last station)			–	Yes	Yes
Terminal type			–	RJ45, 8 pole	RJ45, 8 pole

MFD-(AC)-R..., MFD-T...

		unit	MFD-R16 MFD-RA17	MFD-AC-R16	MFD-T16 MFD-TA17	MFD-T.P..
General						
Standards			EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	EN 61000-6-1/-2/-3/-4, IEC 60068-2-6, IEC 60068-2-27
Dimensions (W x H x D)		mm	89 x 90 x 44	89 x 90 x 44	89 x 90 x 25 (built-in)	89 x 90 x 25 (built-in)
Weight		kg	0.15	0.15	0.14	0.14
Mounting			Fitted into the power supply unit.			
Terminal capacity						
Solid		mm^2	0.2/4 (AWG 24 - 12)	0.2/4 (AWG 24 - 12)	0.2/4 (AWG 24 - 12)	0.2/4 (AWG 24 - 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 24 - 12)	0.2/2.5 (AWG 24 - 12)	0.2/2.5 (AWG 24 - 12)	0.2/2.5 (AWG 24 - 12)
Flat-blade screwdriver		mm	3.5 x 0.6	3.5 x 0.6	3.5 x 0.6	3.5 x 0.6
Power supply						
Solid		mm^2	–	–	–	–
Flexible with ferrule		mm^2	–	–	–	–
Flat-blade screwdriver		mm	–	–	–	–
Data cable						
Solid		mm^2	0.08/2.5 (AWG 28 - 12)	0.08/2.5 (AWG 28 - 12)	0.08/2.5 (AWG 28 - 12)	0.08/2.5 (AWG 28 - 12)
Flexible with ferrule		mm^2	0.08/1.5 (AWG 28 - 12)	0.08/1.5 (AWG 28 - 12)	0.08/1.5 (AWG 28 - 12)	0.08/1.5 (AWG 28 - 12)
Ambient climatic conditions						
Operating ambient temperature		°C	-25 - 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2			
Condensation			Prevent condensation by means of suitable measures			
LCD display (clearly legible)		°C				
Storage		°C	-40 - 70	-40 - 70	-40 - 70	-40 - 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 - 95	5 - 95	5 - 95	5 - 95
Air pressure (in operation)		hPa	795 - 1080	795 - 1080	795 - 1080	795 - 1080
Ambient mechanical conditions						
Pollution degree			2	2	2	2
Protection type (IEC/EN 60529, EN50178, VBG 4)			IP20	IP20	IP20	IP20
Vibrations (IEC/EN 60068-2-6)						
Constant amplitude 0.15 mm		Hz	10 - 57	10 - 57	10 - 57	10 - 57
Constant acceleration, 2 g		Hz	57 - 150	57 - 150	57 - 150	57 - 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Shocks	18	18	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1	1	1
Mounting position			Vertical or horizontal			
Electromagnetic compatibility (EMC)						
Electrostatic discharge (ESD), to IEC EN 61000-4-2						
Air discharge		kV	8	8	8	8
Contact discharge		kV	6	6	6	6
Electromagnetic fields (RFI), to IEC EN 61000-4-2		V/m	10	10	10	10
Radio interference suppression			EN 55011 Class B, EN 55022 Class B			
Burst to IEC/EN 61000-4-4						
Supply cables		kV	2	2	2	2
Signal cables		kV	2	2	2	2
Power pulses (surge) (IEC/EN 61000-4-5)kV		kV	2 (supply cables, symmetrical)	2 (supply cables, symmetrical)	2 (supply cables, symmetrical)	2 (supply cables symmetrical, MFD-AC-CP8..)
Power pulses (surge), to IEC/EN 61000-4-5kV		kV	0.5 (supply cables, symmetrical)	0.5 (supply cables, symmetrical)	0.5 (supply cables, symmetrical)	0.5 (supply cables, symmetrical, MFD-CP8..)
Radiated RFI, to IEC/EN 61000-4-6		V	10	10	10	10
Insulation resistance						
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142			
Insulation resistance			EN 50178			

Multi-function display

I/O modules

MFD-(AC)-R..., MFD-T...

		unit	MFD-R16 MFD-RA17	MFD-T16 MFD-TA17	MFD-T...P...	MFD-AC-R16
Digital inputs 24 V DC						
Number			12	12	6	
Inputs can be used as analog inputs			4 (I7, I8, I11, I12)	4 (I7, I8, I11, I12)	2 (I11, I12)	
Potential isolation						
From power supply			No	No	No	
Between digital inputs			No	No	No	
From the outputs			Yes	Yes	Yes	
From PC interface, memory card, easy NET, easyLink			Yes	Yes	Yes	
Rated operating voltage	U_e	V DC	24	24	24	
On signal "0"	U_e	V DC	< 5.0 (I1 - I6, I9 - I10), < 8 (I7, I8, I11, I12)	< 5.0 (I1 - I6, I9 - I10), < 8 (I7, I8, I11, I12)	< 5.0 (I1 - I4), < 8.0 (I11, I12)	
On signal "1"	U_e	V DC	> 15.0 (I1 - I6, I9 - I10), > 8.0 (I7, I8, I11, I12)	> 15.0 (I1 - I6, I9 - I10), > 8.0 (I7, I8, I11, I12)	>15.0 (I1 - I4), > 8.0 (I11, I12)	
Input current on signal "1"						
I1 to I6		mA	3.3 (at 24 V DC)	3.3 (at 24 V DC)	–	
I1 to I4		mA	–	–	3.3 (at 24 V DC)	
I7, I8		mA	2.2 (at 24 V DC)	2.2 (at 24 V DC)	–	
I9, I10		mA	3.3 (at 24 V DC)	3.3 (at 24 V DC)	–	
I11, I12		mA	2.2 (at 24 V DC)	2.2 (at 24 V DC)	2.2 (at 24 V DC)	
Delay time from 0 to 1						
Debounce ON		ms	20	20	20	
Debounce OFF		ms	Normally 0.1 (I1 - I4), normally 0.25 (I5 - I12)			
Delay time from 1 to 0						
Debounce ON		ms	20	20	20	
Debounce OFF		ms	Normally 0.1 (I1 - I4), normally 0.4 (I5, I6, I9, I10), normally 0.2 (I7, I8, I11, I12)	Normally 0.1 (I1 - I4), normally 0.4 (I5, I6, I9, I10), normally 0.2 (I7, I8, I11, I12)	Normally 0.1 (I1 - I4), normally 0.2 (I11, I12)	
Cable length (unshielded)		m	100	100	100	
Frequency counters						
Number			4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	
Counter frequency		kHz	< 3	< 3	< 3	
Pulse shape			Square	Square	Square	
Incremental counters						
Number			2 (I1 + I2, I3 + I4)	2 (I1 + I2, I3 + I4)	2 (I1 + I2, I3 + I4)	
Counter frequency		kHz	≦ 3	≦ 3	≦ 3	
Pulse shape			Square	Square	Square	
Signal offset			90°	90°	90°	
High-speed counter inputs						
Number			4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	4 (I1, I2, I3, I4)	
Counter frequency		kHz	< 3	< 3	< 3	
Pulse shape			Square	Square	Square	
Cable length, shielded		m	< 20	< 20	< 20	
Digital inputs 115/230 V AC						
Number						12
Status display						LCD display (if provided)
Potential isolation						
From power supply						No
Between digital inputs						No
From the outputs						Yes
From PC interface, memory card, easyNet, easyLink						Yes
Rated voltage L (sinusoidal)						
On signal "0"		V AC				0 - 40
On signal "1"		V AC				79 - 264
Rated frequency		Hz				50 - 60
Input current on signal "1"						
I1 to I12		mA				12 x 0.2 (at 115 V AC, 60 Hz), 12 x 0.5 (at 230 V AC, 50 Hz)
Delay time						
Delay time (0 - 1/1 - 0) I1 - I12, 50/60 Hz						10/100
Max. admissible cable length (per input)						
I1 to I12		m				Normally 60

MFD-R..., MFD-T...

	unit	MFD-R... MFD-T...
Analog inputs		
Number		4 (I7, I8, I11, I12) 2 (I11, I12) for MFD-T(A)P
Potential isolation		
From power supply		No
From the digital inputs		No
From the outputs		Yes
From PC interface, memory card, easyNet, easyLink		Yes
Input type		DC voltage
Signal range	V DC	0 - 10
Resolution, analog	V	0.01
Resolution, digital	V	0.01
Resolution	Bit	10 (value 0 - 1023)
Input impedance	kΩ	11.2
Accuracy of actual value		
Two MFD devices	%	± 3
Within a single device	%	± 2 %
Conversion time analog/digital	ms	Each CPU cycle
Input current	mA	< 1
Cable length shielded	m	< 30

	unit	MFD-RA17 MFD-TA17	MFD-TAP
Analog outputs			
Number		1	1
Potential isolation			
From power supply		No	No
From the digital inputs		No	No
From the digital outputs		Yes	Yes
From PC interface, memory card, easyNet, easyLink		Yes	Yes
Output type		DC voltage	DC voltage
Signal range	V DC	0 - 10	0 - 10
Max. output current	A	0.01	0.01
Load resistance	kΩ	1	1
Overload and short-circuit protection		Yes	Yes
Resolution, analog	V DC	0.01	0.01
Resolution, digital	Bit	10 (value 0 - 1023)	12 (value 0 - 4095) at QA01, MD
Resolution, digital	V DC	–	0.1, 0.01, 0.001 at MD
Recovery time	µs	100	100
Accuracy			
-25 °C - 55 °C	%	2	2
25C	%	1	1
Conversion time, analog/digital	ms	Each CPU cycle	Each CPU cycle

	unit	MFD-TP, MFD-TAP
Analog input temperature resistance Pt100 or Ni1000 sensors		
Number		2 x Pt 100 or 2 x Ni1000 (according to part no.)
Input type resistance sensor		
Platinum sensor Pt100 according to DIN EN 60751, IEC 751		MFD-TP12-PT...
Nickel sensor Ni1000 according to DIN 43760		MFD-TP12-NI...
Temperature range		
Pt100, range A, selectable	°C, (°F)	-40 - +90, (-40 - 194); 0 - 250, (32 - 482); 0 - 400, (32 - 752)
Ni1000, range A, selectable	°C, (°F)	-40 - +90, (-40 - 194); 0 - 250, (32 - 482)
Pt100, range B	°C, (°F)	-0 - +8500, (32 - 1562); -200 - 200, (-328 - 392)
Potential isolation		
From power supply		No
From the digital inputs		No
From the outputs		Yes
From PC interface, memory card, easyNet, easyLink		Yes
Resolution digital, scaling per sensor		
With operands "IA" and "MD", selectable under scaling	Bit	12 (0 - 4095)
With operand "MD", selectable under scaling	°C, (°F)	1, 0.1, (1), (0.1)
Measurement value resolution analog/digital	Bit	Depending upon the scaling
Measuring current	mA	< 1.6
Damage limit (in the case of a wiring error)		Apply external voltage
Measurement method		Two or three wire per sensor, selectable by connection of sensor
Accuracy (without EMC interference)		
Two MFD devices one above the other	%	Normally 1; maximal 1.6 (Pt), 1.2 (Ni)
Pt100 RTD (offset error, linearity error, repetition accuracy, temperature dependency of the device included)	%	± 0.8 of measurement range
Ni1000 RTD (offset error, linearity error, repetition accuracy, temperature dependency of the device included)	%	± 0,6 of measurement range
Conversion time analog/digital		
Without sampling time setting, selectable per sensor	ms	200
With sampling time (adjustable), selectable per sensor	ms	200 - 65535
Additional measurement aids		
Filtering (software), analog input signal smoothing (Pt1 characteristic), only with set sampling time, selectable for each detector		Yes
Filter for suppression of certain frequencies and their multiples	Hz	50, 60, 250, 500
Diagnostics		
Card diagnostic		Yes
Wire break diagnostic per sensor		Yes
Wire break diagnostic per sensor		Yes
Below lower measurement range		Yes
Upper measuring range limit of sensor exceeded		Yes
Cable length shielded	m	< 10

Control relays, multi-function display

Basic devices, expansion devices

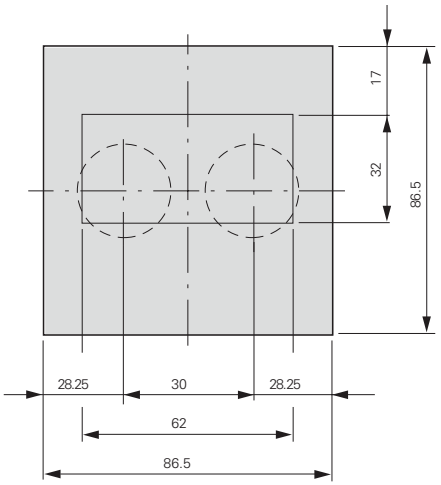
easy...T..., MFD-T...

		unit	MFD-T..
Transistor outputs			
Number			4
Rated operating voltage	U_e	V DC	24
Permissible range	U_e	V DC	20.4 - 28.8
Ripple		%	≦5
Supply current			
On signal "0"	Normally/ max.	mA	18/32
On signal "1"	Normally/ max.	mA	24 /44
Protection against polarity reversal			Yes (Caution: A short circuit will result if 0 V or GND is applied to the outputs in the event that the supply voltage is connected to the wrong poles.)
Potential isolation			
Potential isolation from power supply, inputs			Yes
From PC interface, memory card, easyNet, easyLink			–
From the inputs			Yes
Rated operational current on signal "1" DC	I_e	A	Max. 0.5
Lamp load without R_v		W	5 (Q1 - Q4)
Residual current on signal "0" per channel		mA	< 0.1
Max. output voltage			
On "0" at external load < 10 MΩ		V	2.5
On "1" at I_e = 0.5 A		V	$U = U_e$ -1 V
Short-circuit protection			Thermal (Q1 – Q4), (analysis via diagnostics input I16)
Short-circuit tripping current for R_a ≦ 10 mΩ		A	0.7 ≦ I_e ≦ 2 per output
Total short-circuit current		A	8
Peak short-circuit current		A	16
Thermal cutout			Yes
Max. operating frequency at constant resistive load R_L < 100 kΩ(dependent on program and load)		Ops/h	40000
Parallel connection of outputs			
With resistive load, inductive load with external suppressor circuit, combination within a group			Group 1: Q1 to Q4
Number of outputs	Max.		4
Max. total current		A	
Status indication of the outputs			
Inductive load to EN 60947-5-1			
Without external suppressor circuit			
$T_{0.95}$ = 1 ms, R = 48 Ω, L = 16 mH			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. operating frequency f = 0.5 Hz (max. ED = 50 %)		Operations	1500
DC-13, $T_{0.95}$ = 72 ms, R = 48 Ω, L = 1.15 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. operating frequency f = 0.5 Hz (max. ED = 50 %)		Operations	1500
$T_{0.95}$ = 15 ms, R = 48 Ω, L = 0.24 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. operating frequency f = 0.5 Hz (max. ED = 50 %)		Operations	1500
With external suppressor circuit			
Utilization factor		g	1
Duty factor		% DF	100
Max. switching frequency, max. duty factor		Operations	Depending on the suppressor circuit

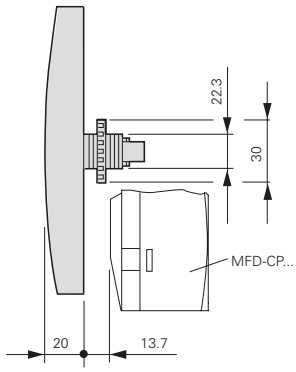
Notes For additional technical data EASY5… and EASY7… → AWB2528-1508D, EASY8… → AWB2528-1423D, MFD-Titan → AWB2528-1480D

Dimensions

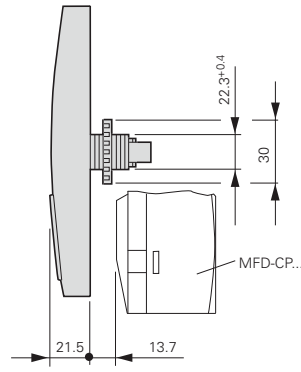
MFD-80...



MFD-80



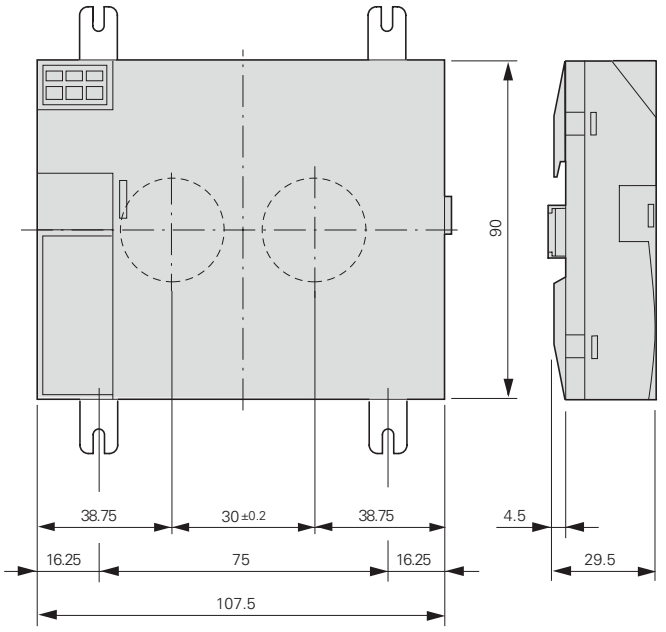
MFD-80-B



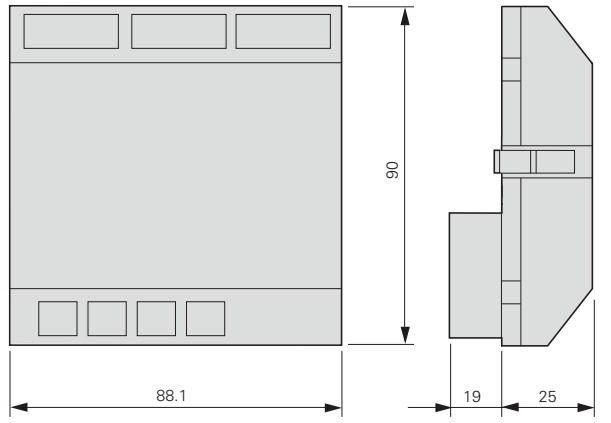
Control relays, multi-function display

Central processing unit, communicati

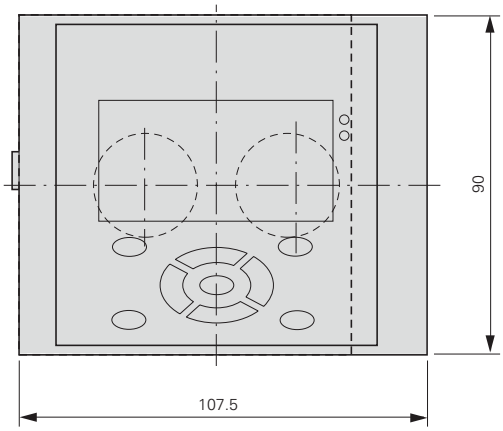
MFD-CP...,MFD-AC-CP...



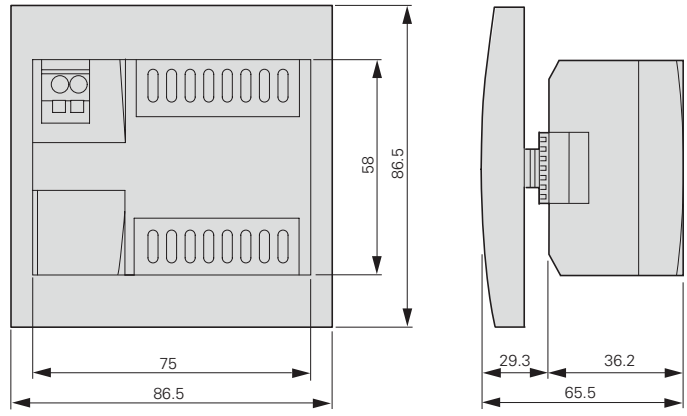
MFD-R...,MFD-T...,MFD-AC-R16

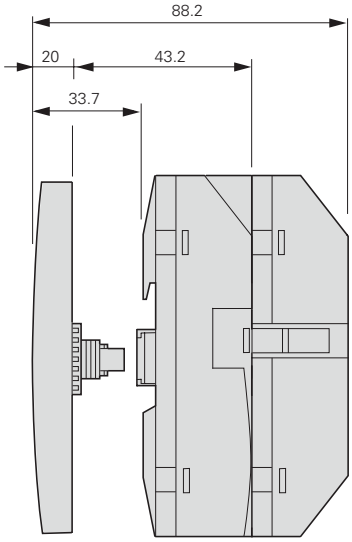


MFD-80...+MFD-CP...+MFD-R.../MFD-T...
MFD-80... + MFD-AC-CP... + MFD-AC-R16



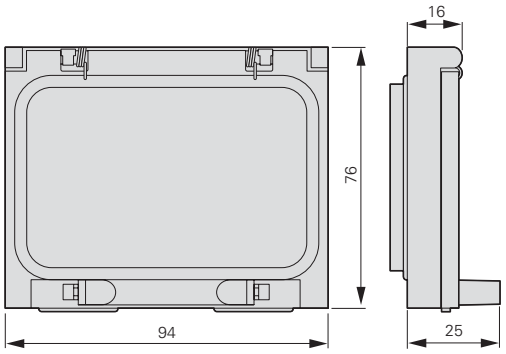
MFD-80...+MFD-CP4



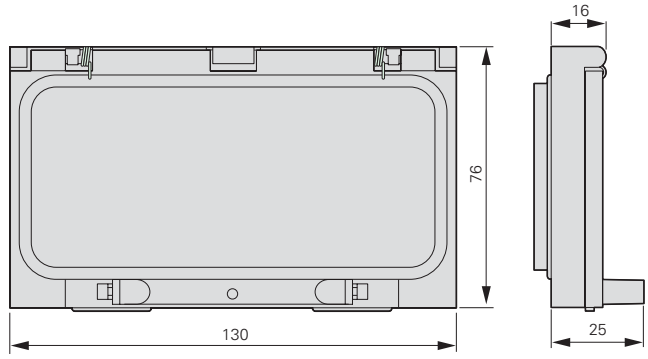


Hinged inspection windows

SKF-FF4

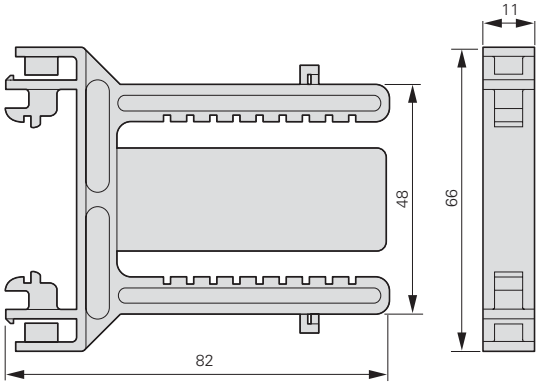


SKF-FF6



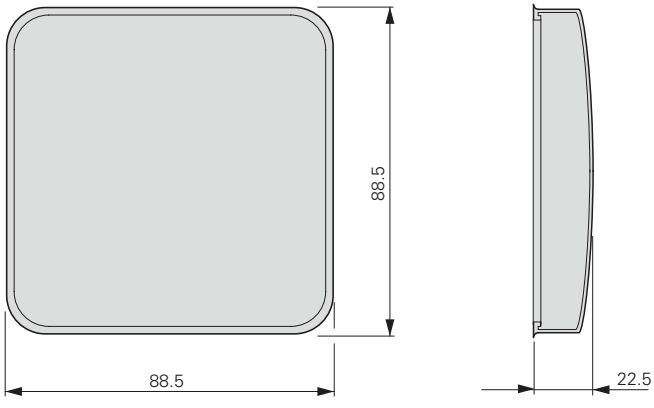
Top-hat rail adapter for hinged inspection window

SKF-HA



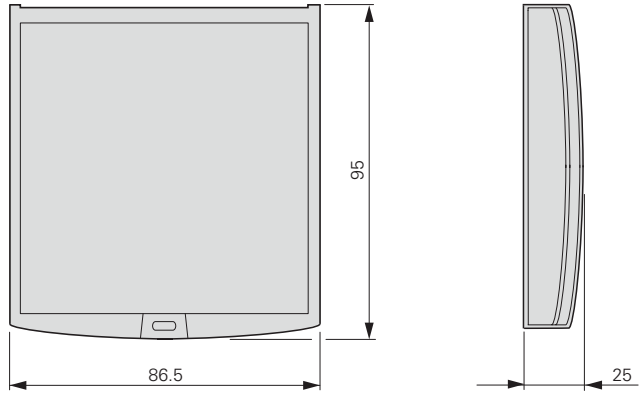
Protective diaphragm

MFD-XM-80



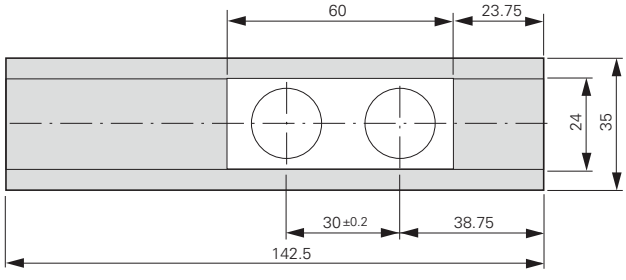
Protective cover

MFD-XS-80



Mounting rail

MFD-TS-144



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